

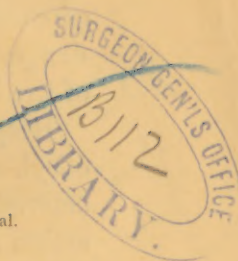
Levis (R. J.)

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THE NEW ANÆSTHETIC—
THE BROMIDE OF ETHYL

By R. J. LEVIS, M.D.,

Surgeon to the Pennsylvania Hospital and to the Jefferson College Hospital.



It is generally admitted that there are essentials of anæsthesia which are not satisfactorily attained by the anæsthetics in ordinary use. The inconveniences of ether and the dangers of chloroform have suggested further inquiry among the large number of chemical substances which are capable of producing insensibility to the impression of pain.

In April, 1879, my attention was directed to the bromide of ethyl by Dr. Laurence Turnbull, of this city, who was, I believe, the first to experiment on the human subject with its anæsthetic properties, testing it originally on himself, and afterwards on patients undergoing surgical operations, but its physiological action on some of the lower animals had been previously determined by other experimenters.

I have since that time continued to give practical attention to the subject of the anæsthetic use of the bromide of ethyl, and, whilst recognizing the fact that a very large number of administrations is essential to determine its merits comparatively with other agents, I have now had sufficient experience upon which to, at least, base some very decided impressions of its value.

Its principal physiological characteristics which will concern the surgeon, are its rapidity of action and the quickness of recovery from its effects.

As far as observed by me, it does not influence the circulation, excepting to sometimes produce a slight increase in the rapidity of the heart's action and in arterial tension or pressure. The cerebral anæmia and the fatal syncope

of cardiac depression, to which chloroform is liable, are dangers which do not appear to threaten in the anæsthesia of the bromide of ethyl.

Respiration is but little influenced by the bromide of ethyl, as I have administered it, beyond the ordinary characteristics of all anæsthetic sleep; but in this respect its action seems more to resemble that of ether than that of chloroform. While making these assertions, I fully recognize the fact that the ultimate effects of all anæsthetics show that they are depressing agents.

Nausea and vomiting appear to occur less frequently in the anæsthesia of the bromide of ethyl than in that of ether or of chloroform, and the rapidity of recovery from its effects must render such impressions very brief and transient.

Commencing with the occasional and very cautious use of the agent, I have more recently adopted it to the exclusion of other anæsthetics, and am recording a series of detailed observations as to its effects.

Bromide of ethyl, or hydrobromic ether, is a colorless liquid, with a specific gravity a little greater than that of water. It has a decided and characteristic odor, which is thought to resemble that of chloroform, but is less agreeable. It vaporizes more readily than chloroform, and in this respect and in density is intermediate between ether and chloroform. It seems to be entirely eliminated through the lungs, and in this regard has a decided advantage as to safety over chloroform. The high vaporizing point of chloroform does not permit its rapid elimination from the body, and it is not entirely removed by the lungs. So, when some secreting organs happen to be, from disease, incapacitated, the nervous system is liable to become overwhelmed. The odor of the bromide of ethyl remains for a longer time on the breath of a patient than does that of ether or chloroform, but it seems to be quickly dissipated from the apartment in which it has been used. Its vapor

is quite unirritating to the respiratory passages when inhaled, and in this quality has the advantage over both ether and chloroform.

General excitement and the tendency to struggle occur far less frequently than in the early stages of the anæsthesia of ether, and, apparently, even in that of chloroform. It is evident that the impression on the motor centres must be very rapid, and I estimate that complete anæsthesia is accomplished in one-third less time than is the case with chloroform. The recovery from its effects is even comparatively more rapid, in the greater number of cases the time not exceeding two minutes after the inhalation has ceased. Muscular co-ordination is so quickly regained that the patient is often able at once to stand and to walk on awakening from profound anæsthesia. The pupils dilate as soon as complete anæsthesia is induced, and, as the sentient state returns, they resume their normal condition. I suggest that the condition of the pupils may be an index and guide in the administration.

Anæsthesia with the bromide of ethyl is usually effected in from two to three minutes. The most rapid production of complete insensibility, in my experience, has been in one minute, in the case of a girl eight years old; the longest period has not in any case exceeded four minutes. When carefully administered, the quantity consumed has varied from one fluidrachm in the case of a child, iridec-tomy being performed, to eleven drachms used during an amputation of the forearm of an adult, occupying forty minutes, including the ligation of the vessels and the dressing of the stump.

The quantity of the article consumed in effecting anæsthesia will greatly depend on the method and manner of using it. Much of it is, of course, wasted by diffusion in the atmosphere. With great regard for economy, this waste may be prevented by imperviously covering the material on which it is poured. My own plan, with

adults, is to pour two drachms of the bromide of ethyl on a small napkin folded up to a space of about four inches square, and then laid on a larger napkin, folded so as to be large enough to cover the entire face of the patient. It is well to secure the two napkins together with a pin.

The vapor of the bromide of ethyl is not inflammable; indeed, when dense, it extinguishes a flame if brought into contact with it. In this respect it is free from the danger incident to ether when administered at night in proximity to lights, or when the actual cautery is used. The article used by me was made by the firm of Powers & Weightman, manufacturing chemists, of this city.

The ordinary essentials of the proper and safe production of anæsthesia are required in the use of the bromide of ethyl. That these essential details are apt, through ignorance or carelessness, to be disregarded, every practical surgeon is aware, and the frequent difficulties and occasional calamities will attest. When it is stated that whole pints of ether, or many ounces of chloroform, were used in the production of anæsthesia in a single case, he knows where was the fault. When it is asserted that "ether would not act and chloroform had to be resorted to," he knows why it "would not act."

It is becoming evident that the dread of unavoidable disasters from chloroform and the inconveniences of ether are tending to prevent their humane administration in many cases where the blessing of anæsthesia is due to the sufferer. This is particularly so in localities where etherization, simple and safe as it is, seems strangely ignored. In a prominent French hospital I not long ago witnessed the application of the actual cautery and other painful procedures without the resource of anæsthesia.

Whilst feeling inclined to impress caution in regard to the use of so powerful an agent as the bromide of ethyl, I am, from a basis of experience, inclined to recommend its use to the profession.